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Beyond Boundaries: The Crossroads of Immersive Technology and Modes of Creative Leadership

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Abstract

This paper provides a brief overview of immersive technology and the ethnographic techniques that were leveraged by a student project team at the University of Pennsylvania over a twelve-week time period (Spring, 2011). The project sought to identify current and best practices for corporate and organizational uses of immersive technology. A specific emphasis is placed on modes for creative leadership, executive coaching and the non-profit organization, the Center for Creative Leadership (CCL). The closing section offers suggestions for further research on the continued growth and application of immersive technology.

Keywords

virtual collaboration, virtual encounters, collaboration, immersive technology, Second Life, leadership, executive coaching, The Center for Creative Leadership

Comments

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Beyond Boundaries:
The Crossroads of Immersive Technology and Modes of Creative Leadership

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May 10, 2011

Abstract

This paper provides a brief overview of immersive technology and the ethnographic techniques that were leveraged by a student project team at the University of Pennsylvania over a twelve-week time period (Spring, 2011). The project sought to identify current and best practices for corporate and organizational uses of immersive technology. A specific emphasis is placed on modes for creative leadership, executive coaching and the non-profit organization, the Center for Creative Leadership (CCL). The closing section offers suggestions for further research on the continued growth and application of immersive technology.

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Introduction

We find ourselves in an economic era like none other. Competition, globalization, cost constraints, sustainability, innovation and productivity are just a few of the for-profit themes that are driving organizations to continually assess leading edge practices. Our project team believes that immersive technology, while it is still evolving, is a leading lever to be applied by organizations that seek to compete in the current global economy. The purpose of continued research on immersive technology is to take part in the evolution and development of practices that aim to foster the growth of this important technology for distributed work.. Over the course of our lab-based project, we identified several key uses of immersive technology, including but not limited to, training, leadership development, team collaboration, product development/simulation, and global meetings management (e.g. conferences). What follows is a summary of our learning and suggested next steps.

Immersive Technology

Immersive technology refers to technology that has the potential to blur the line between the physical world and digital or simulated world, thereby creating a sense of deep engagement or involvement (Wikipedia, "Immersive Technology"). In order to deliver a perceptually real environment, there are multiple components that, when combined, deliver a sense of immersion. The basic components are 3D perception, social interaction and immersive software.

3D Perception is achieved through the advanced application of both hardware and software. Common examples are 3D displays, head-mounted displays, 3D audio effects, surround sound, audio headsets, keyboards and gaming devices that, in combination, emulate one or more of the five senses? (e.g., vision, auditory, tactile, olfaction, and gestation).

Social interaction occurs through movement, albeit movement of a graphical image on a computer that represents a person (avatar). Avatars (virtual world participants) are designed and controlled by the user and allow for human-like movements and speech recognition. There is a significant amount of new research regarding the use of avatars and their ability to manifest personality. This phenomenon is currently being studied in virtual worlds such as Second Life. Findings support the notion of increased human engagement through the use of immersive technology (Yee, 2011).

The final immersive technology component is software. Software is programmed and relies upon hardware (e.g. graphic and audio devices) to render a real-time and life-like user experience. It's common that the software integrates components of artificial intelligence and virtual worlds (Wikipedia, "Immersive Technology").

Immersive technology had its first origins in the gaming industry stemming back to 1994 with what is still the world's most popular massively multiplayer online role playing game (MMORPG), World of Warcraft (WoW). As of October 2010, WoW had over 12 million subscribers or 62% of the total MMORPG subscription market (Wikipedia, "World_of_Warcraft"). As with other virtual worlds, players control a character (avatar) within a world in third- or first-person view, exploring the landscape, fighting various

monsters, completing quests, and interacting with non-player characters (NPCs) or other players. Also similar to other MMORPGs, *World of Warcraft* requires the player to pay for a subscription, either by buying prepaid game cards for a selected amount of playing time, or by using a credit or debit card to pay on a regular basis.

Research

For the purposes of a university or real-world project, how might this gaming environment and virtual world technology translate into a useful medium for the corporate or professional organization? This is the quest that our project team initiated under the guidance of Dr. Ana Reyes, Affiliated Faculty, University of Pennsylvania, Organizational Dynamics Program. While our project team reviewed numerous publications, we also wanted to better understand how dynamic organizations were empirically leveraging immersive technology.

In an effort to complement the vast array of research and current publications on this topic, our efforts involved the identification and description of current virtual organizational development, collaboration and change initiatives that are being conducted in 3D or “immersive” online spaces. Our objective was to identify key immersive technology providers and corporate users, tour identified immersive workspaces, shadow and observe individuals or groups as they conduct or participate in immersive work initiatives and to interview the relevant stakeholders (i.e., organizational leaders, change agents, participants, virtual world designers, administrators, researchers, faculty) in order to:

- Identify corporate, academic, non-profit and government workplaces that are presently utilizing 3D immersive environments to meet organization development needs;
- Understand why immersive technologies were chosen and how these organizations are using the 3D environments to accomplish their goals, and
- Derive lessons and insights from this research for the purposes of designing 3D Learning Conferences and a potential 3D Organizational Dynamics Laboratory at Penn.

As our project team identified organizations and relevant organizational leaders according to these project parameters, we leveraged the list of initial exploratory questions provided below (Table 1). The questions were designed in a manner that would allow our team to efficiently narrow our target list while providing transparency of our project scope to possible organizational contributors.

Table 1. Introductory Research Questions

1. Please describe the use of 3D immersive environments within your organization?
 - a. Tell the story of how these efforts came to be?
 - b. What goals, challenges or problems do these initiatives address?
2. Which people/departments are currently using 3D environments and for what purposes are they used? How many are using these on a regular basis?
3. What lessons have you learned from your experience with this work?
4. How do you expect this work to evolve within the next 1-3 years?
5. Who are the persons, internal groups and partners who have influenced the development of work in these online spaces?
6. Which immersive spaces are you using (i.e., vendors/platforms/technology partners)?
7. Do you have additional projects underway to expand or enhance the use of 3D virtual environments? If so, what are they and when are you expecting to begin using them?

Our team collaboratively discussed organizational selection and utilized professional and educational resources in order to identify a meaningful list of organizations that are actively engaged in the application of immersive technology (Table 2).

Table 2. Organizations

Organization	Application of Immersive Technology
University of Pennsylvania	Training, Education
IBM	Virtual Conferencing Center
Stanford University	Virtual Global Teamwork; Virtual Interaction Lab
Intel	Teamwork; Communities of Practice
SAIC	Training; Collaboration
FireSabre Consulting LLC	Teen Education
Exitreality	Immersive Messaging
Virtual World Association	Advancement of Virtual Worlds
Louisiana Department of Transportation	Training
The Center for Creative Leadership (CCL)	Leadership Coaching
Cisco Systems	GSX Global Annual Sales Meeting
SAP	Conference Centers
MPK20: Sun's Virtual Workplace	Collaboration
Eon Realty	Interactive Visualization; Collaboration
Engineering & Computer Simulations, Inc .	Virtual Reality Simulation
PolyDimensions GmbH	Medical Use Virtual Simulation
ProtonMedia (Protosphere)	Virtual World Developer

Meetings and communications were team-based and agenda-driven. Project and organizational content was indexed and archived in our Google project team site (a free Google site that our team built specifically for project collaboration). This site allowed our team to share notes, data, discussions, readings, agendas, the project calendar and actions (Figure 1). The Google Project Team site is an example of how our team independently identified a suite of collaborative tools to facilitate project work (similar to the Stanford Project Based Learning teams, <http://pbl.stanford.edu>).

Figure 1. Google Project Team Site

As we collected information we applied ethnographic templates, (e.g. a field notes template) to gather and organize data received from the organizations listed in Exhibit 2. After further review of our notes, we observed that many organizations utilized an immersive platform developed by Linden Research, Inc. called, Second Life (SL). Second Life is an online virtual world which was launched in 2003. Registered users (“residents”) leverage viewers (free desktop applications) to access the SL world to socialize, participate in individual and group activities, create and trade virtual property, and conduct events (e.g. classes, coaching sessions and conferences). As of 2011, SL has more than 20 million registered user accounts (Wikipedia, “Second Life”).

We quickly recognized that there are many applications for SL such as education (online collaborative classes), arts (virtual exhibits), science (data visualization), and work solutions (virtual meetings, simulation of work processes, conferences, training, and coaching). We narrowed our focus to work solutions since we were most interested in complex uses of immersive technology for which the value proposition is evident but still forming (The value proposition for educational and gaming uses is much more defined).

Center for Creative Leadership

A significant contributor to the evolving value proposition of immersive technology related to work uses is the Center for Creative Leadership (CCL). CCL is the one of the world’s top leadership development organizations involved in both research and program design and delivery. It is a unique center for business education that combines behavioral

science research and practical business applications with innovative training, coaching, assessment and publishing (Datar, 2008).

In 2008, CCL recognized that Second Life presented a valuable opportunity to enhance its coaching and feedback capabilities, but like many professional organizations that we explored (Exhibit 2), CCL first conducted research to better understand SL's immersive technology. CCL received a research grant from the Society for Human Resource Management (SHRM) and collaborated with George Mason University and the U.S. Air Force to examine the feasibility of coaching in Second Life (Torres, 2009). CCL purchased its first SL land ("island") and developed a plan to conduct fifty initial feedback sessions in SL.

Fast forward three years and enter our project team from Penn. After discovering CCL's involvement with SL, we initially reached out to CCL contact Renee Hultin, Director, Global Product Development, who provided an immediate introduction to one of the original CLL Second Life research team members, Cresencio Torres, Senior Enterprise Associate. In our initial meeting with Cresencio, we learned that he was part of leveraging the SHRM grant to build the SL island, acquire the necessary hardware for holding sessions in SL, and contract and train coaches.

Cresencio currently leads a CCL Innovation Group in San Diego that created this SL project. Invited into our first meeting was Oliver Bermoyo, CCL technical guru and SL designer. We learned that CCL's idea to use SL for work use was serendipitous. The CCL team participated in an annual conference held by the Association for Managers of Innovation (AMI) on the University of Pacific's Second Life campus (YouTube, "AMI

Meeting in Second Life”, April 2008) and approached CCL’s coaching talent manager, David Powell with the question, “Can we conduct coaching in SL?” The answer led to the SHRM grant and cooperation with the University of the Pacific, George Mason University and the U.S. Airforce to explore the realm of possibilities.

After our team held this introductory call with Cresencio and Oliver, we were invited for another meeting, this time in CCL’s Second Life campus. Our agenda included a complete tour through CCL’s Second Life virtual island, including areas that are closed to the general public and even CCL clients. We started the tour in the Meeting Center. This area is designed to welcome clients to the CCL campus, introduce clients to coaches, and provide an overview of “the journey” (a CCL metaphor for the coaching process). The Meeting Center environment is intentionally designed to create the optimal setting for a coaching session. It is a calm and retreat-like setting, with sounds of nature, flowing water and ambient lighting, yet very polished, organized and professional (picture a very expensive travel retreat, e.g. a Four Seasons spa on an exotic island, see Figure 2, “Meeting Center”). The Meeting Center is a secure area where only coach and client can meet (thereby preserving confidentiality). The space is globally accessible by computer, but there have been times, due to technology constraints, that either the coach or client had to be present at CCL’s physical campus in order to gain entry and conduct an error-free session.

Figure 2. Meeting Center.

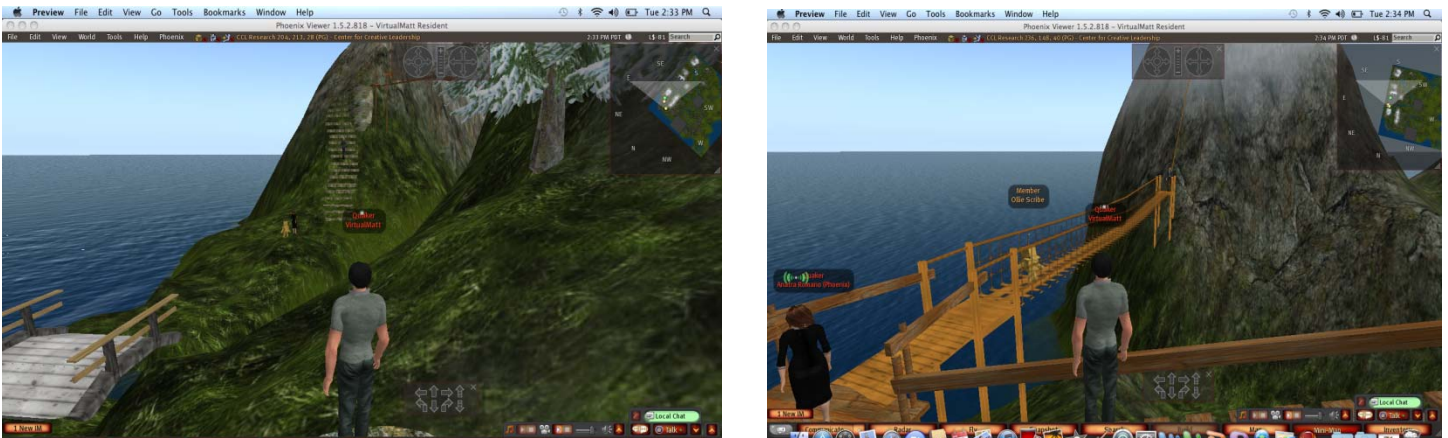
We were then led to the Visual Explorer where 3D pictures are arranged for the coach and client to review. This exercise initiates a narrative of the journey or, as Cresencio stated, “starting with the end in mind.” Clients select pictures as a method of goal setting and the pictures are archived and referenced throughout the sessions.

CCL led us next to the Assessment Center, a circular room that displays a client’s unique feedback reports (e.g. leadership competencies). We learned that they created fifty unique feedback rooms for simultaneous coaching sessions. Unfortunately, the number of rooms and hosting locations available are currently constrained to four simultaneous users due to limited funding (the grant is nearly exhausted) and network capacity.

After a client reviews initial feedback and understands how the coaching-client data will be organized and reviewed, the journey continues along the Path of Understanding (Figure 3), a virtual path where coach and client continue discussion and the metaphor of

“reaching the mountain” top unfolds. Second Life viewers (free ware desktop applications), such as the Phoenix Viewer, which our team leveraged, allow for users to change the environment with the click of a button (e.g. adding music, adding a sunset).

Figure 3. Path of Understanding



The final areas that we explored were micro-simulation areas (“micro-sims”). CCL had an initial goal of designing fifty micro-sims but, due to limited funds, have only created three: Values Explorer, the Maze and Winter Survival (Figure 4). The Values Explorer is designed to facilitate a discussion between coach and client, whereby clients choose their top five values and then interactively arrange them in order of priority. The Maze and Winter Survival simulations are designed for teams to collaborate and problem solve as specific tasks and obstacles are encountered.

journey occurs in a virtual world and real coaching and client growth occurs. They still maintain a presence in SL and conduct coaching twice per month through June, 2011 at which time the grant will be exhausted. While the grant will expire and their campus in SL hasn't moved beyond what we saw during our tour, there are many more opportunities to pursue using this type of technology.

Suggested Further Research

In addition to the organizations listed in Table 2, there are dozens more paving the way for genuine productivity and use cases for the continued growth and application of immersive technology. In our research, we learned that there are at least three drivers for the work use of immersive technology: increased revenue, reduced cost and/or increased productivity. As organizations implement these technologies, it will be important to document continued use and best practices. Our initial research project should only be considered an introduction. Further research should examine uses beyond coaching and client feedback. Perhaps there are HR or organizational dynamics uses that deliver value beyond traditional technology tools (e.g. WebEx, teleconferences and email). While there are significant technology challenges (hardware and internet bandwidth constraints), organizations such as CCL are actively identifying solutions and alternative approaches to ensure seamless user experiences. Further research should explore how work uses may include social and professional networking, knowledge sharing, distributed collaboration and improved team productivity. While our project team achieved tangible results, there are many more uses and best practices to be observed and documented. Continued

research has the potential to pave the way for what may be a new generation of work use of immersive technologies. As social media platforms, such as Facebook, have paved the way for distributed communication, so might improved use of immersive technology optimize organizational revenue, costs and productivity ultimately leading organizations beyond current boundaries.

Comments

Where does the future lie with the professional use of immersive technology? It seems that every day I hear a reference to one of the global leaders in social technology (e.g. Facebook, LinkedIn, Twitter) and can't help but wonder if there will be a convergence of social media technology and immersive technology. At the present time, Facebook is very simple and requires very little connectivity bandwidth, but as a standalone platform, it seems to be lacking the rich elements of effective communication often required by a corporate user. Additionally, beyond social media technology (software), there isn't a day where I don't see smart hardware (e.g. iPads, iPhones) that have the potential to allow for considerably more rich communication (e.g. iChat®, Facetime®) and may also play some role in the future of enhanced immersive technology. Continued research will be exciting (not to mention leading edge) in these areas and the corporate organization will have much to gain from refined use cases, increased bandwidth and the optimal mix of ever-improving hardware and software.

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